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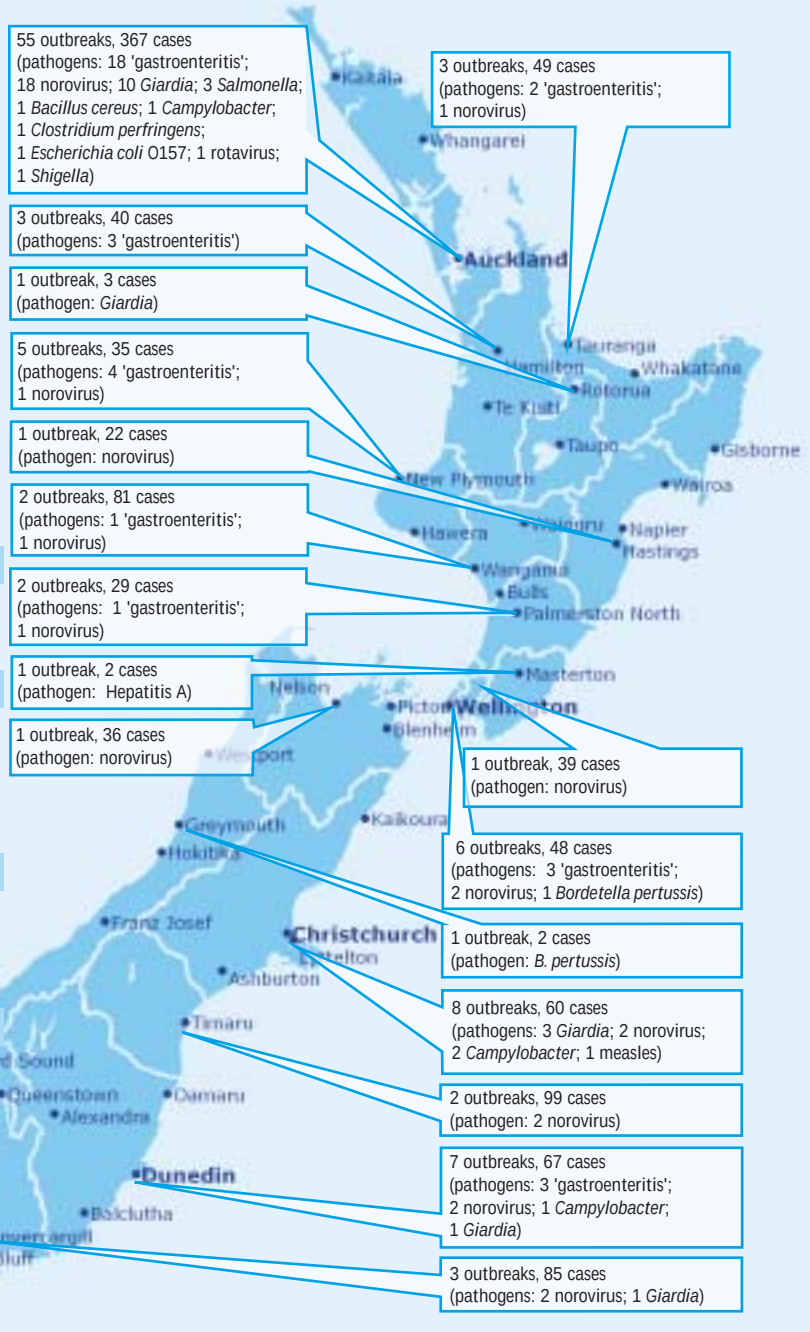
New Zealand Public Health Surveillance Report

September 2008: Covering April - June 2008

Contents & Highlights

This Quarter's Outbreaks

Notification and outbreak data in this issue are drawn from the April - June quarter of 2008. The outbreak map on this page consists of all outbreak information, final and interim. The total number of outbreaks and cases by region and outbreaks by pathogen are reported, as notified up to 9 July 2008.



The latest reports from STI Surveillance, Antimicrobial Resistance, Virology and Enteric Reference Laboratory are available at **www.surv.esr.cri.nz**

1. Editorial

Surveillance and response to events involving CBRE materials

Events involving chemical, biological, radiological, or explosive (CBRE) materials can result from intentional acts, natural occurrences, or accidents. Recent global events such as: the release of sarin in the Tokyo subway in 1995; the anthrax letters in the USA in 2001; the emergence of severe acute respiratory syndrome (SARS) coronavirus in 2002; and the bombings on London's public transport system in 2005 have highlighted the threat posed by these events and the need for countries to prepare for them.

The availability of scientific input is a key component of any response to an event involving a CBRE agent. Scientific input has many roles including:

(1) The development and maintenance of surveillance systems to enable early detection of an incident;

(2) The development and maintenance of coordinated laboratory networks to facilitate efficient communication within a region and internationally;

(3) The availability of training to increase awareness of CBRE agents and increase responders' skills to ensure the substances are handled correctly;

(4) The rapid, accurate, and safe identification of any unknown substance;

(5) Determination of how far an agent has spread and if any decontamination and/or remediation has been effective;

(6) Detection and collection of forensic evidence to support the requirements of the justice system.

In 2005, ESR identified that New Zealand had insufficient scientific capability to rapidly respond to events involving CBRE materials. Capability in this area was deemed important and ESR used internal funding to establish the Microbial and Chemical Forensics (MCF) research programme. The MCF programme has utilised ESR's core skills, which support New Zealand's national health and justice systems, and built on them to develop additional capability to respond to events involving CBRE agents.

A key component of a coordinated, effective response to events involving CBRE agents is effective communication between agencies responding to an event and links to the international community. The MCF programme has also enabled contacts to be established: (1) with New Zealand agencies that would be expected to respond to an event, (2) with New Zealand diagnostic and analytical laboratories, and (3) with key international scientific organisations.

The MCF programme has made significant progress in the analysis of unknown substances (also referred to as white powder analysis). The result of this work is that ESR can rapidly identify unknown substances within a secure forensic facility, which ensures chain of custody requirements are maintained. Samples are analysed in a specialist sample processing laboratory, which provides staff with high-level protection from hazardous chemical and biological agents. Standard operating procedures have been developed that enable rapid preliminary results to be available within 2-3 hours of sample receipt. Fast preliminary results are vital for scene management. This helps to minimise unnecessary disruption to the public when an innocuous substance is identified and reduce the impact of hazardous agents, by allowing early administration of the most appropriate medical treatment and implementation of appropriate containment. Most of the samples submitted for analysis have been relatively harmless although it is important that all incidents that appear to have malicious intent or where the motive is unknown are investigated thoroughly.

Analysing all unknown substances in one specialised laboratory enhances CBRE surveillance by ensuring data are collated and subsequently used to help identify any unusual incidents, any trends over time, and possibly identify connections between events in different areas of the country. For example, in 2007, Forensic Service Centre staff linked two events that occurred in different parts of New Zealand to the same source. It is unlikely that the events would have been linked without this centralised facility.

Evidence collection kits for the sampling of powders and liquids have also been developed within the MCF programme. These kits contain equipment to sample a powder or liquid in the field. They also enable the chain of custody requirements to be met, for forensic purposes, and the packaging supplied adheres to the transport regulations for both hazardous chemical and biological agents.

For further information on the MCF programme please contact us at mcf@esr.cri.nz or visit www.esr.cri.nz/capabilities/Pages/MicrobialChemicalForensics.aspx

Kristin Dyet, Microbial and Chemical Forensics research programme, ESR

2. Notifiable Disease Surveillance

The following is a summary of disease notifications for the April - June quarter of 2008 and cumulative notifications and rates calculated for a 12-month period (July 2007 - June 2008). For comparative purposes notification numbers and rates are presented in brackets for the same periods in the previous year. A robust method of constructing 95% confidence intervals is used to determine 'statistically significant differences' throughout this report unless otherwise stated [see Newcombe, R. G. and D. G. Altman. Proportions and their differences. In: *Statistics with Confidence.* 2000. BMJ Books. Bristol]. Data contained within this report are based on information recorded in EpiSurv by public health service staff up to 9 July 2008. As this information may be updated over time, these data should be regarded as provisional.

National surveillance data tables are available online (www.surv.esr.cri.nz).

VACCINE PREVENTABLE DISEASE

Measles

- *Notifications:* 9 notifications in the quarter (2007, 6); 22 notifications over the last 12 months (2007, 21) giving a rate of 0.5 cases per 100,000 population (2007, 0.5); no change
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (0 cases); 6 notifications were laboratory confirmed

Mumps

- *Notifications:* 27 notifications in the quarter (2007, 8); 101 notifications over the last 12 months (2007, 55) giving a rate of 2.4 cases per 100,000 population (2007, 1.3); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (8 cases); 14 notifications were laboratory confirmed

Pertussis

- *Notifications:* 71 notifications in the quarter (2007, 72); 293 notifications over the last 12 months (2007, 662) giving a rate of 6.9 cases per 100,000 population (2007, 15.8); a statistically significant decrease

Rubella

- *Notifications:* 6 notifications in the quarter (2007, 2); 14 notifications over the last 12 months (2007, 9) giving a rate of 0.3 cases per 100,000 population (2007, 0.2); not a statistically significant increase
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (0 cases); 2 notifications were laboratory confirmed

INFECTIOUS RESPIRATORY DISEASES

Acute Rheumatic Fever

- *Notifications:* 73 notifications in the quarter (2007, 17); 268 notifications over the last 12 months (2007, 79) giving a rate of 6.3 cases per 100,000 population (2007, 1.9); a statistically significant increase

- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (17 cases). Cases were distributed by age as follows: 10 (5-9 years), 23 (10-14 years), 13 (15-19 years), 27 (20-49 years); 56 cases were initial attacks of acute rheumatic fever and 17 cases were recurrent attacks

ENTERIC INFECTIONS

Campylobacteriosis

- *Notifications:* 1,053 notifications in the quarter (2007, 2,419); 8,530 notifications over the last 12 months (2007, 14,979) giving a rate of 201.7 cases per 100,000 population (2007, 358.0); a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (1,762 cases) and from the same quarter last year (2,419 cases)

Gastroenteritis

- *Notifications:* 115 notifications in the quarter (2007, 132); 612 notifications over the last 12 months (2007, 674) giving a rate of 14.5 cases per 100,000 population (2007, 16.1); not a statistically significant decrease
- *Comments:* there has been a statistically significant decrease from the previous quarter (179 cases). Note that this is not a notifiable disease *per se* except in persons with a suspected common source or with a high risk occupation, and the term 'gastroenteritis' provides a catch-all category for enteric diseases that are not notifiable and for syndromic reports that come through public health units, including direct reports from the public where the causative pathogen may never be known

Listeriosis

- *Notifications:* 2 notifications in the quarter (2007, 8); 25 notifications over the last 12 months (2007, 22) giving a rate of 0.6 cases per 100,000 population (2007, 0.5); not a statistically significant increase
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (9 cases). Neither of the cases were aged under 1 year

Paratyphoid fever

- *Notifications:* 2 notifications in the quarter (2007, 4); 24 notifications over the last 12 months (2007, 25) giving a rate of 0.6 cases per 100,000 population (2007, 0.6); no change
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (11 cases)

Salmonellosis

- *Notifications:* 284 notifications in the quarter (2007, 317); 1,361 notifications over the last 12 months (2007, 1,254) giving a rate of 32.2 cases per 100,000 population (2007, 30.0); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (494 cases)

Typhoid

- *Notifications:* 6 notifications in the quarter (2007, 10); 30 notifications over the last 12 months (2007, 62) giving a rate of 0.7 cases per 100,000 population (2007, 1.5); a statistically significant decrease

VTEC infections

- *Notifications:* 33 notifications in the quarter (2007, 22); 129 notifications over the last 12 months (2007, 81) giving a rate of 3.1 cases per 100,000 population (2007, 1.9); a statistically significant increase

ENVIRONMENTAL EXPOSURES & INFECTIONS

Chemical Poisoning

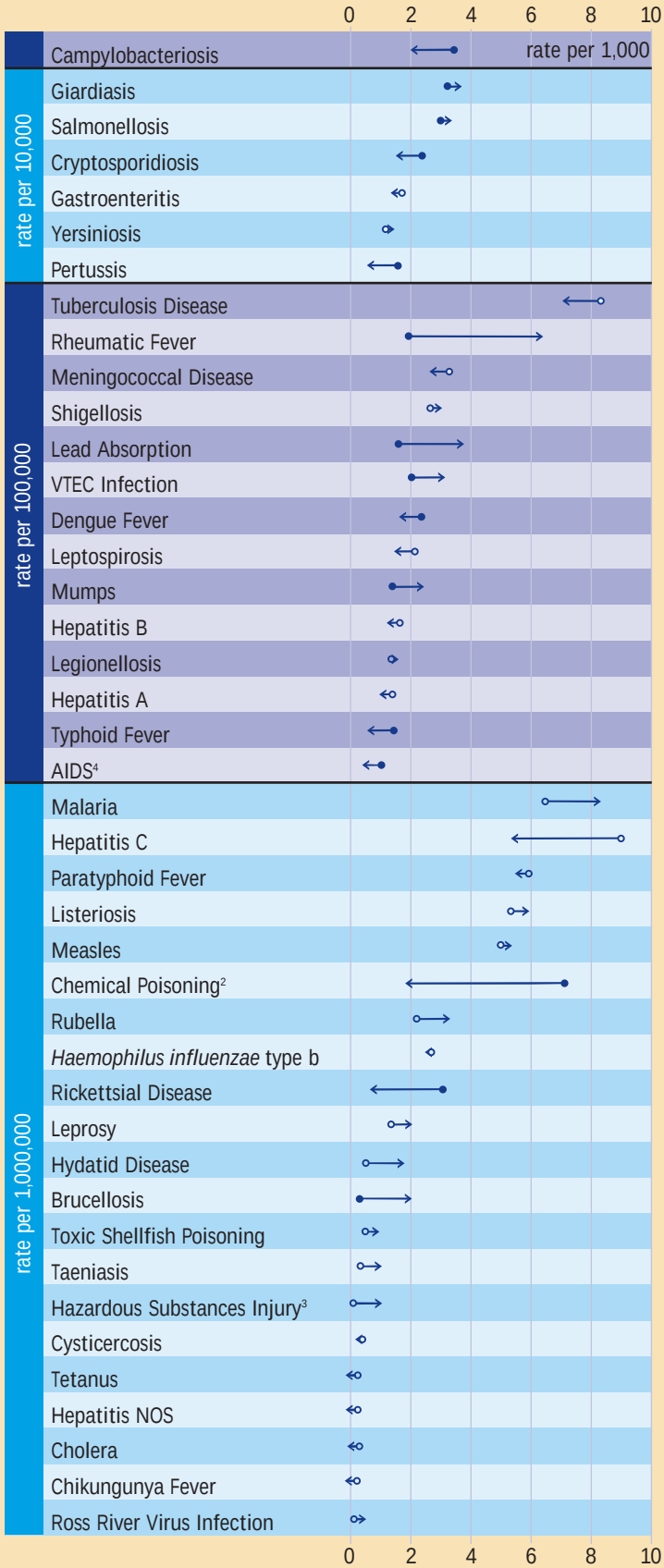
- *Notifications:* 0 notifications in the quarter (2007, 3); 8 notifications over the last 12 months (2007, 30) giving a rate of 0.2 cases per 100,000 population (2007, 0.7); a statistically significant decrease

Cryptosporidiosis

- *Notifications*: 95 notifications in the quarter (2007, 215); 674 notifications over the last 12 months (2007, 985) giving a rate of 15.9 cases per 100,000 population (2007, 23.5); a statistically significant decrease

National Surveillance Data

12-Monthly Notification Rate Changes[1]



Notifications per 1,000 or 10,000 or 100,000 or 1,000,000 persons

Rate Change Symbol Key:

- > Rate increase from the previous 12-month period
- < Rate decrease from the previous 12-month period
- ● Statistically significant rate change
- ○ Statistically non-significant rate change

[1] Rates are calculated for the 12-month period July 2007 - June 2008 and compared to previous 12-month rates
[2] From the environment
[3] Hazardous Substance Injury became notifiable in EpiSurv as of 19 September 2007
[4] Data provided by the AIDS Epidemiology Group, University of Otago

- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (215 cases)

Giardiasis

- *Notifications:* 432 notifications in the quarter (2007, 363); 1,488 notifications over the last 12 months (2007, 1,346) giving a rate of 35.2 cases per 100,000 population (2007, 32.2); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (363 cases)

Lead Absorption

- *Note:* since June 2007 the blood lead level for reporting has lowered from 0.72 to 0.48 µmol/l
- *Notifications:* 62 notifications in the quarter (2007, 12); 157 notifications over the last 12 months (2007, 65) giving a rate of 3.7 cases per 100,000 population (2007, 1.6); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (12 cases). Cases were distributed by age as follows: 2 (5-14 years), 6 (15-24 years), 19 (25-44 years), 29 (45-64 years), 6 (65+ years); 54 male cases, 7 female cases, and 1 of unknown sex. 39 cases recorded an occupation that involved exposure to lead: radiator repairer (7 cases), painter (5 cases), laboratory technician (2 cases), and an aeronautical engineer, aircraft refueller, automotive electrician, factory process worker, fitter, foundry worker, lead lighter, plastics factory worker and scrap metal worker (1 case each), and 16 cases not specified. Of the remaining 23 cases, 9 recorded hobbies involving exposure to lead: shooting (6 cases), makes own bullets (2 cases), and backyard junk collector (1 case). Only 21 of the 59 notifications with reported blood lead levels would have been reported under the previous blood lead level threshold

Yersiniosis

- *Notifications*: 118 notifications in the quarter (2007, 114); 578 notifications over the last 12 months (2007, 523) giving a rate of 13.7 cases per 100,000 population (2007, 12.5); not a statistically significant increase
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (190 cases)

NEW, EXOTIC & IMPORTED INFECTIONS

Brucellosis

- *Notifications:* 4 notifications in the quarter (2007, 1); 8 notifications over the last 12 months (2007, 1) giving a rate of 0.2 cases per 100,000 population (2007, 0.0); a statistically significant increase
- *Comments:* 3 notifications were laboratory confirmed and the remaining case is under investigation; 2 cases were overseas during the incubation period (Australia and USA), the travel history of 1 case was unknown, and 1 case had recently been in Tonga where they had developed symptoms of infection

Dengue Fever

- *Notifications:* 21 notifications in the quarter (2007, 32); 72 notifications over the last 12 months (2007, 104) giving a rate of 1.7 cases per 100,000 population (2007, 2.5); a statistically significant decrease
- *Comments:* 20 notifications were laboratory confirmed; 18 cases were overseas during the incubation period and the travel history of 3 cases was unknown. Places visited were Antigua and Barbuda (1), Australia (1), Bali (2), Italy (1), Malaysia (1), Samoa (1), Thailand (1), Tonga (11) and Vanuatu (1)

Rickettsial Disease

- *Notifications:* 2 notifications in the quarter (2007, 1); 3 notifications over the last 12 months (2007, 13) giving a rate of 0.1 cases per 100,000 population (2007, 0.3); a statistically significant decrease
- *Comments:* Species for the two cases was unknown

3. Other Surveillance Reports

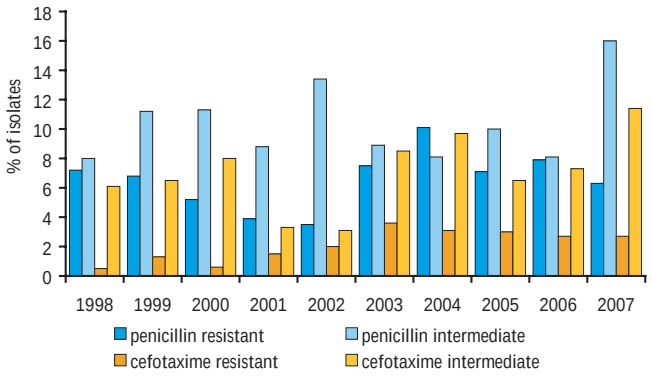
Antimicrobial susceptibility among invasive isolates

Streptococcus pneumoniae, Neisseria meningitidis and *Haemophilus influenzae* isolated from normally sterile sites are routinely referred to ESR for the national laboratory-based surveillance of invasive disease due to these organisms. The antimicrobial susceptibility of all viable invasive isolates of these three organisms referred in 2007 was tested. More detailed information is available on www.surv.esr.cri.nz/antimicrobial/antimicrobial_resistance.php.

Streptococcus pneumoniae

The antimicrobial susceptibility of 555 invasive *S. pneumoniae* isolates was tested in 2007. Six percent were penicillin resistant (MIC ≥2 mg/L) and another 16% had intermediate penicillin resistance (MIC 0.12-1 mg/L). These penicillin resistance rates are based on the Clinical and Laboratory Standards Institute's (CLSI) interpretive standards current in 2007. While penicillin resistance has been quite variable over the last 10 years, there was no significant difference (P≤0.05) between the rate of resistance in 2007 and that in 1998 (Figure 1). Penicillin nonsusceptibility (resistance + intermediate resistance, MIC ≥0.12 mg/L) has been constant over most of the last 10 years but there was a significant increase between 2006 and 2007.

Figure 1. Penicillin and cefotaxime* resistance among invasive *S. pneumoniae*, 1998-2007



* cefotaxime susceptibility based on the CLSI meningitis interpretive standards

Applying the CLSI meningitis interpretive standards, 3% of the invasive pneumococci in 2007 were cefotaxime resistant (MIC ≥2 mg/L) and 11% had intermediate cefotaxime resistance (MIC 1 mg/L). Applying the non-meningitis interpretive standards, 2% were cefotaxime resistant (MIC ≥4 mg/L) and 1% had intermediate cefotaxime resistance (MIC 2 mg/L). There has been a trend of increasing resistance to third-generation cephalosporins over the last 10 years, although there has been no further increase during the last four years (Figure 1).

The rates of resistance to other antibiotics in 2007 included 14% erythromycin resistance, 6% constitutive clindamycin resistance with another 0.5% inducible clindamycin resistance, 35% co-trimoxazole resistance and 9% tetracycline resistance. Four percent of isolates had combined penicillin and erythromycin resistance, and 7% had combined penicillin-nonsusceptibility and erythromycin resistance. All isolates were susceptible to vancomycin and moxifloxacin.

All penicillin-resistant and cefotaxime-resistant invasive isolates were serotypes included in the 7-valent pneumococcal conjugate vaccine (PCV-7) added to the national immunisation schedule in June 2008. Similarly, a high proportion of penicillin-nonsusceptible and cefotaxime-nonsusceptible isolates causing invasive pneumococcal disease were serotypes included in PCV-7. Among patients <5 years of age, 93% of the penicillin-nonsusceptible and 97% of the cefotaxime-nonsusceptible isolates were serotypes included in PCV-7.

Neisseria meningitidis

The antimicrobial susceptibility of all 67 meningococcal isolates from cases of invasive disease in 2007 was tested. There was no resistance to penicillin, ceftriaxone, rifampicin or ciprofloxacin. Twenty-one percent of

isolates had reduced penicillin susceptibility, with MICs of 0.12-0.5 mg/L. Isolates with reduced penicillin susceptibility have been increasing over the last 10 years. However, meningococcal infections due to such isolates are still treatable with penicillin.

Haemophilus influenzae

The antimicrobial susceptibility of 60 invasive *H. influenzae* isolates was tested in 2007. Eight of the 60 isolates were serotype b. Twenty percent of isolates produced β-lactamase and another 15% were ampicillin resistant but β-lactamase negative. There was no resistance to cefotaxime or rifampicin.

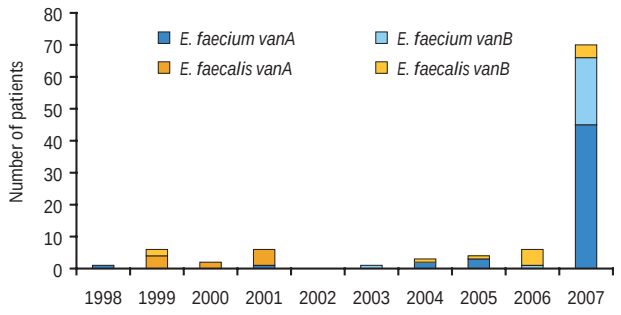
Reported by Helen Heffernan, Communicable Disease Programme, ESR

Vancomycin-resistant Enterococci (VRE)

The national surveillance of vancomycin-resistant *Enterococcus faecium* and *E. faecalis* is based on the referral of isolates to ESR. Microbiology laboratories are requested to refer all VRE isolates to ESR for confirmation, identification of the *van* gene, and molecular typing to identify the strain.

In 2007, VRE were referred from 69 patients (Figure 2). This is a large increase on previous years and was due entirely to an outbreak in Auckland City Hospital - the first VRE outbreak in a New Zealand hospital. In August 2007, several patients in Auckland City Hospital were identified as having the same strain of vanA-positive *E. faecium*. During the remaining months of the year, this outbreak strain was isolated from a total of 44 patients in the hospital. During the course of the outbreak investigation, several other strains of VRE were isolated from a further 25 patients. Two vanB-positive *E. faecium* strains were each isolated from several patients. Most (91.3%) of the VRE were isolated from screening swabs taken as part of extensive outbreak control measures.

Figure 2. Species and van genotype of VRE isolated in New Zealand, 1998-2007



The vanA *E. faecium* outbreak strain had not been previously recognised in New Zealand. It is multiresistant to ampicillin, ciprofloxacin, high-level gentamicin, high-level streptomycin and tetracycline. Multilocus sequence typing identified the strain as sequence type (ST) 375, which belongs in the ST17 clonal complex or lineage. Globally, vancomycin-resistant *E. faecium* belonging to this lineage are associated with nosocomial transmission and outbreaks. The other vancomycin-resistant *E. faecium* strains that were identified in 2007 also belonged to the ST17 clonal complex.

For a more detailed report see
www.surv.esr.cri.nz/PDF_surveillance/Antimicrobial/VRE_2007.pdf

Reported by Helen Heffernan, Communicable Disease Programme, ESR

4. Outbreak Surveillance

The following information is a summary of the outbreak trends for New Zealand, from data collected in the last quarter (April - June 2008). Comparisons are made to the previous quarter (January - March 2008), and to the same quarter in the previous year (April - June 2007). Note that the outbreak data in this section are notified to ESR by the Public Health Services.

General

- 102 outbreaks notified in this quarter (1064 cases)
- 75 are 'final' reports (873 cases); 27 are 'interim' reports (191 cases) that have yet to be finalised and closed

All following data pertain to final reports only.

- 11.6 cases on average per outbreak, compared with 14.7 cases per outbreak in the previous quarter (14.1 cases per outbreak in the same quarter of last year)
- 56 hospitalisations: norovirus (32), gastroenteritis (20), *Shigella* (3) and *Campylobacter* (1)
- 1 death: norovirus

Pathogens

- 33 norovirus outbreaks (601 cases) during this quarter
- 14 *Giardia* outbreaks (72 cases)
- 13 'gastroenteritis' outbreaks (156 cases)
- 4 *Campylobacter* outbreaks (12 cases)
- 3 *Salmonella* outbreaks (7 cases)
- 2 *Bordetella pertussis* outbreaks (4 cases)
- 1 *Bacillus cereus* outbreak (3 cases)
- 1 *Clostridium perfringens* outbreak (2 cases)
- 1 *Escherichia coli* O157 outbreak (2 cases)
- 1 Hepatitis A outbreak (2 cases)
- 1 rotavirus outbreak (5 cases)
- 1 *Shigella* outbreak (7 cases)

Modes of Transmission

Note that reporting allows for multiple modes of transmission to be selected. In many instances no mode of transmission is selected for outbreaks notified to ESR, consequently, numbers may not add up to the total number of outbreaks reported.

- 54 person-to-person, from (non-sexual) contact with an infected person (including droplets): 30 norovirus (585 cases), 11 *Giardia* (58 cases), 4 gastroenteritis (59 cases), 2 *B. pertussis* (4 cases), 2 *Salmonella* (4 cases), 1 *Campylobacter* (2 cases), 1 *Escherichia coli* O157 (2 cases), 1 Hepatitis A (2 cases), 1 rotavirus (5 cases) and 1 *Shigella* (7 cases)
- 17 foodborne, from consumption of contaminated food or drink (excluding water): 8 norovirus (60 cases), 4 gastroenteritis (11 cases), 2 *Campylobacter* (7 cases), 1 *B. cereus* (3 cases), 1 *C. perfringens* (2 cases) and 1 Hepatitis A (2 cases)
- 11 environmental, from contact with an environmental source (e.g. swimming): 7 norovirus (212 cases), 3 *Giardia* (29 cases) and 1 gastroenteritis (18 cases)
- 4 waterborne, from consumption of contaminated drinking water: 3 *Giardia* (26 cases) and 1 *Campylobacter* (3 cases)
- 4 'other' mode of transmission: 3 norovirus (via fomites) (96 cases) and 1 *Giardia* (via poor sanitary facilities) (14 cases)
- 12 'unknown' mode of transmission: 6 gastroenteritis (88 cases), 3 norovirus (16 cases), 2 *Giardia* (5 cases) and 1 *Salmonella* (3 cases)

Circumstances of Exposure/Transmission

Common 'settings' where exposure/transmission occurred or contaminated food/beverage was prepared for consumption are identified below. Note that multiple settings can be selected and in many instances no settings are selected in outbreaks notified to ESR.

- 24 home: 10 *Giardia* (44 cases), 7 norovirus (35 cases), 1 *B. pertussis* (2 cases), 1 *Campylobacter* (2 cases), 1 *E. coli* O157 (2 cases), 1 gastroenteritis (4 cases), 1 Hepatitis A (2 cases), 1 *Salmonella* (2 cases) and 1 *Shigella* (7 cases)
- 13 rest home: 10 norovirus (245 cases), 2 gastroenteritis (37 cases) and 1 *Campylobacter* (2 cases)
- 12 café: 6 norovirus (21 cases), 3 gastroenteritis (9 cases), 1 *B. cereus* (3 cases), 1 *Campylobacter* (5 cases) and 1 *C. perfringens* (2 cases)

Circumstances of Exposure/Transmission continued

- 5 childcare: 2 norovirus (39 cases), 1 *Campylobacter* (2 cases), 1 gastroenteritis (18 cases) and 1 rotavirus (5 cases)
- 4 camp: 2 norovirus (60 cases), 1 *Campylobacter* (3 cases) and 1 *Giardia* (2 cases)
- 3 hospital (acute care): 3 norovirus (107 cases)
- 2 hospital (continuing care): 2 norovirus (53 cases)
- 2 hotel/motel: 1 gastroenteritis (2 cases) and 1 norovirus (2 cases)
- 2 'other' food outlet: 2 norovirus (13 cases)
- 2 supermarket: 1 gastroenteritis (2 cases) and 1 norovirus (2 cases)
- 2 workplace: 1 norovirus (46 cases) and 1 gastroenteritis (35 cases)
- 1 caterers: norovirus (29 cases)
- 1 hostel: gastroenteritis (19 cases)
- 1 school: *B. pertussis* (2 cases)
- 1 swimming/spa pool: *Giardia* (2 cases)
- 1 takeaways: gastroenteritis (2 cases)
- 5 'other setting': 3 *Giardia* (25 cases), 1 gastroenteritis (33 cases) and 1 norovirus (7 cases)
- 6 outbreaks with no setting selected: 2 gastroenteritis (30 cases), 2 *Salmonella* (5 cases), 1 *Giardia* (3 cases) and 1 norovirus (3 cases)

5. Outbreak Case Reports

Wax ester fish poisoning

On 22 February 2008, the Auckland Regional Public Health Service (ARPHS) was notified of an outbreak of gastroenteritis affecting two household members. The couple had consumed home-cooked chicken, oil fish steaks and baby octopus with sweet chilli sauce on 18 February. Symptoms included stomach pain, headache, itching and rapid anal discharge of oily yellow/orange droplets with a median incubation period of 26 hours. These symptoms were consistent with wax ester fish poisoning.

Oil fish (*Ruvettus pretiosus*) has been associated with wax ester poisoning as it naturally contains high concentrations of indigestible wax esters (approximately 20% by weight). These esters are not absorbed by the gut and can have a laxative effect on people who eat the fish. This poisoning is mainly associated with the symptoms of rapid anal discharge of oily yellow/orange droplets along with diarrhoea, nausea, headache and vomiting. The incubation period for wax ester poisoning can range from 1 to 90 hours after consumption.

The premises from which the oil fish was purchased was visited on 25 February 2008 to raise awareness of wax ester fish poisoning. It was found that oil fish was imported in small quantities from the tropics - in this instance a total of 30 kgs had been bought. At the time of the visit there was no leftover oil fish at the premises. After further discussion, it was agreed that the site would no longer sell oil fish.

Orange roughy (*Hoplostethus atlanticus*), is another fish species that contains high concentrations of wax ester. With orange roughy, most of their wax esters are mostly present in the superficial flesh (the flesh just under the skin), so removing both the skin and the superficial flesh (deep-skinning) may get rid of much of the offending oil. Those consuming orange roughy whole are at risk of wax ester poisoning.

This small outbreak highlights an unusual cause of foodborne illness: wax ester poisoning-associated diarrhoeal syndrome. Wax esters, when present, cannot be broken down by heating or freezing. However, due to their short symptomatic period of around 24 hours and the unusual symptoms, it is likely that wax ester poisoning is markedly under reported.

Reported by David Choi, Technical Officer, Greg Simmons, Medical Officer of Health and Shikha David, Health Protection Officer, Auckland Regional Public Health Service

An outbreak of noroviral gastroenteritis on a trans-Tasman voyage

Gastrointestinal (GI) illness has become an all-too-frequent occurrence on cruising holidays.[1] Most cruise operators follow the requirements of the Vessel Sanitation Program (VSP) of the Centers for Disease Control and Prevention (CDC)[2] and have active surveillance of GI illness among passengers and crew. People with GI illness are encouraged to seek advice from the ship's medical staff and details of all cases are recorded in a GI log. According to the VSP criteria "Reportable GI illness" is characterised by (i) diarrhoea (three or more episodes of loose stools in a 24 hour period) or (ii) vomiting and one additional symptom including: one or more episodes of loose stool in a 24 hour period; abdominal cramps; headache; muscle aches; and fever. Any person presenting with GI illness must stay isolated in their cabin until they have been symptom-free for 24 hours. Some shipping companies require isolation of cabin mates[3] but other companies have no such restrictions.

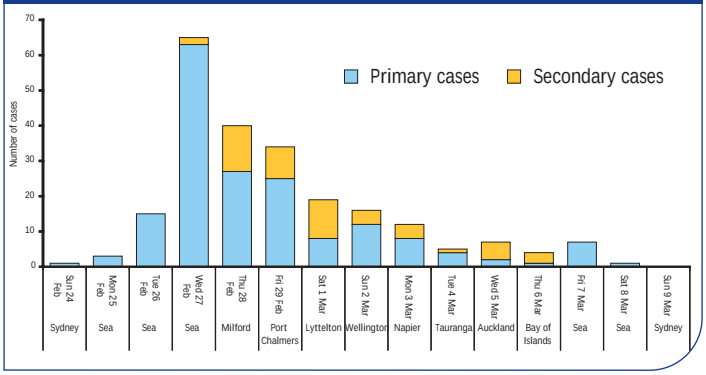
An increasing percentage of passengers and crew with GI illness triggers certain generalised actions. Code Yellow is declared at 1% illness and entails enhanced cleaning and general awareness of illness. At 2% illness, Code Red is declared when in addition to enhanced cleaning, all self-serve buffets are closed and all food is served by crew members. For ships sailing in United States waters or arriving in US ports, details of all Code Red events must be sent to VSP.[4]

A cruise vessel carrying 2,035 passengers and 855 crew sailed from Sydney at midnight on Sunday 24 February 2008 for a 14 day round-trip cruise visiting Milford Sound and making seven port calls in New Zealand. According to the ship's GI log, staff at the Medical Centre saw three passengers with reportable GI illness on Monday 25 February. A further 15 cases were noted on 26 February when enhanced cleansing operations were put in place. By 0001 hours on 28 February a total of 74 passengers and 10 crew (3.6% of the passengers, 1.2% of the crew and 2.9% overall) had reported GI disease and the ship was placed in Code Red. Regular messages were broadcast to the passengers reminding them that any sick passenger should contact the Medical Centre and everybody should practice thorough hand washing and drying after visiting the toilet or eating.

The outbreak was notified to public health authorities on 28 February after the ship entered New Zealand territorial waters. The shipping company responded to all media requests in consultation with the Medical Officer of Health. The outbreak waned during the next eight days when the ship was visiting New Zealand ports (Figure 3). Sick passengers were not allowed on shore excursions until they had been symptom-free for 24 hours. During the remainder of the voyage a further 145 people reported ill, giving a total of 229 cases overall with an attack rate of 7.9% (229/2890).

The outbreak appeared to be a point source outbreak but the only common source was being on board the vessel from 25 February. No links were identified with food or beverages although no detailed food histories were taken because of the number of affected individuals and the range of available foods. There were no documented incidents of vomiting in public places, which could have triggered a point source outbreak.[5]

Figure 3. Epidemic curve for the voyage



Overall, there were 52 passengers who were classified as secondary cases. Based on the ships records, there were 188 primary cases that shared cabins with a total of 182 additional people, 31 of whom became a secondary case. Therefore, the secondary attack rate in cabin mates exposed to a primary case was 17.0% (31/182). This finding supports research demonstrating that cases with GI illness on a cruise ship are more likely to have a cabin mate sick with diarrhoea and vomiting (Odds Ratio = 3.4; 95% Confidence Interval 1.8-6.4).[6]

The estimated duration of illness was 42 hours (range 2 to 134 hours). The times for incubation and duration of illness were consistent with norovirus infection.[7] The pattern of symptoms (diarrhoea (80%), vomiting (79%), abdominal cramps (51%), headache (27%), systemic illness (8%), myalgia (4%), and fever (3%)) was also characteristic of norovirus infection.[8]

Faecal specimens taken at the start of the outbreak were submitted to the Norovirus Reference Laboratory, ESR. Norovirus genogroup II (GII) was identified in six specimens and subsequent genotyping identified the norovirus as a 2006b variant of the common GII.4 'global strain'. In 2007, GII.4 norovirus strains were responsible for 70.9% of 230 laboratory confirmed norovirus outbreaks in New Zealand. The 2006b variant predominated, causing 74.8% of these GII.4 outbreaks (Joanne Hewitt pers. comm.). This is the tenth norovirus-associated cruise ship outbreak reported in New Zealand since 2000. Six of the earlier outbreaks were caused by GII.4 strains. World-wide the GII.4 strains are commonly associated with outbreaks in closed settings including cruise ships, rest homes and hospitals (Gail Greening pers. comm.).

Routine surveillance of disease outbreaks on visiting cruise vessels can provide information about circulating viral genotypes. Control measures in closed communities may take several days to be effective.

For list of references see - www.surv.esr.cri.nz/surveillance/NZPHSR.php

Reported by John Holmes, Medical Officer of Health, Public Health South

Hepatitis A in a Queenstown waitress

On 15 May 2008, Public Health South received laboratory notification of a case of hepatitis A. The case, a 21-year-old Korean hotel waitress had returned to Queenstown from Korea on 7 April. She worked at a Queenstown hotel from 11 April to 4 May when she became unwell and stopped work. She had three consultations with local general practitioners (GPs) before being admitted to Lakes District Hospital on 12 May, where a clinical diagnosis of acute viral hepatitis was made, subsequently confirmed as hepatitis A by laboratory testing. It is likely that she had contracted hepatitis A in Korea because of the low incidence of hepatitis A in Otago and Southland, lack of preceding associated case, and relatively long incubation period (average of 28-30 days but up to 50 days). Korea is a country with "intermediate" prevalence of anti-hepatitis A virus antibody[1], so natural immunity is lower than many countries where hepatitis A is endemic.

The case's work at the hotel involved setting up and maintaining the breakfast buffet, which catered for approximately 300 people each morning. Although most of the food came from the kitchen pre-plated, she directly handled unpeeled fruits and some bread and pastries. It was determined that there was a small risk of infection to around 3000 people who may have used the breakfast buffet when she was likely to be most infectious between 20 April and 4 May. Of these, most were international visitors from countries where hepatitis A is endemic and were likely to be immune. As the case did not come to our attention until 12 days after the onset of symptoms, only those who dined between 2 and 4 May were within the period to benefit from post-exposure prophylaxis (PEP). About 300 diners from New Zealand and Australia were provided with advice, although most were too late for prophylaxis.

Four household contacts and 58 co-workers were given both Human Immune Globulin (IG) and hepatitis A vaccine as PEP in Queenstown on 16 and 17 May, as recommended by the Communicable Disease Control Manual, published by the Ministry of Health.[2] Fourteen adults and three children were given IG, and one child was given hepatitis A vaccine at other Public Health Units throughout New Zealand. A media release was issued on 16 May advertising an 0800 number, which fielded 90 calls between 17 and 23 May.

In New Zealand, the rate of hepatitis A has dropped from around 145.7 per 100 000 population in 1971[3] to 1.0 in 2007.[4] This low natural immunity makes us vulnerable to outbreaks. Although there has been no outbreak associated with this case, it illustrates the potential risk from food-handlers working in large tourist hotels. Therefore, both travel and occupational history are important for GPs to consider in tourist towns, especially if presentation is unusual or a diagnosis of communicable disease likely. The failure to notify following a clinical diagnosis in this case restricted the numbers of those who might have benefited from PEP and resulted in logistically tight timeframes to assemble public health staff and materials in Queenstown.

Food handlers infected with hepatitis A are the source of most reported foodborne outbreaks in Canada[5] and the United States,[6] and hundreds of people can be affected. The Centers for Disease Control and Prevention (CDC) recommends that PEP be considered for persons who consume food prepared by infected food handler if:

(1) the food handler had contact with food that was not subsequently cooked;

(2) the food handler had diarrhoea or poor hygienic practices during the time likely to be infectious;

(3) patrons can be identified and treated within 2 weeks after last exposure.[7]

Co-workers should also be offered post-exposure prophylaxis to limit spread of the disease.

A recent randomised controlled trial comparing the efficacy of IG with hepatitis A vaccine showed that both provided good protection after exposure, though there was also evidence that for those who developed clinical illness, the group who received IG experienced milder symptoms.[8] Based on the results of this study, the CDC revised its guidelines for hepatitis A post-exposure prophylaxis, which state that vaccine should be considered a reasonable alternative to IG for healthy people aged between 12 months and 40 years.[7] While the Canadian guidelines reflect those of the CDC[9], several Australian States recommend use of IG alone for PEP[10,11], and the United Kingdom "Green Book" recommends PEP with IG in the first 14 days after exposure, or consideration of use of vaccine in the first 7 days.[12] In New Zealand, the Communicable Control Disease Manual states that IG should be administered within two weeks of last exposure, while vaccine should only be considered for certain high-risk groups[2]. This illustrates the range of different recommendations across countries, potentially resulting in confusion as to the most appropriate response. Such divergent international recommendations may be cause to review the New Zealand guidelines to manage Hepatitis A cases and contacts in accordance with the most recent evidence, ensuring that a standardised evidence-based approach to prophylaxis is used throughout the country.

For list of references see - www.surv.esr.cri.nz/surveillance/NZPHSR.php

Reported by Rachael McLean, Public Health Medicine Trainee, and Marion Poore, Medical Officer of Health, Public Health South

6. Pathogen Surveillance

Unless otherwise reported, pathogen surveillance covers the April - June 2008 quarter.

ENTERIC PATHOGENS

The Enteric Reference Laboratory (ERL) is responsible for the confirmation of the following notifiable diseases *Salmonellae, Shigellae, Vibrio cholerae* O1 and VTEC.

Salmonella (ERL)

Human and non-human Salmonella isolate data are available at www.surv.esr.cri.nz/enteric_reference/enteric_reference.php

- 292 human and 346 non-human isolates were submitted to ERL (2007, 329 and 213 respectively)
- 2 household clusters of 2 cases each, *S.* Typhimurium phage type 9 NW and *S.* Typhimurium phage type 135 OT
- 12 cases indicated overseas travel

VTEC/STEC (ERL)

- 31 isolates of *E. coli* O157:H7 were laboratory confirmed (2007, 20)
- 1 household outbreak, 2 cases, Auckland
- 10 cases noted bloody diarrhoea

Norovirus (Norovirus Reference Laboratory)

- 45 confirmed norovirus outbreaks were reported (15 per month), of which 20 (44.4%) occurred in rest home (14) and hospital settings (6), and 15 (33%) occurred in child-related (7) and catered settings (8)
- 5 outbreaks occurred in home settings, 1 at a military institution and no information on setting was available for 4 outbreaks

- 33 outbreak strains identified belonged to Genogroup II, 10 outbreaks were associated with Genogroup I strains, and 2 outbreaks where both Genogroup I and II strains as identified in faecal specimens
- the predominant genotype was again GII.4, accounting for 24 outbreaks, including 14 outbreaks in healthcare institutions
- both GII.4 and GI.3 strains were identified in 2 outbreaks
- the GII.4 strains identified included 17 2006b variants, 2 2006a variants and 3 non-variant GII.4 strains
- GI.3 strains were also prevalent, being identified in 8 outbreaks, including the same military institution where a similar norovirus GI.3 strain was identified in an outbreak in February 2008
- recombinant GII.3/GII.4 strains were identified in 5 outbreaks
- other strains identified included GII.6 and GII.7

LEGIONELLOSIS & ENVIRONMENTAL LEGIONELLA

- 19 cases were laboratory-identified this quarter
- all laboratory-identified cases have been notified to the PHU
- all laboratory-identified cases involved sporadic community acquired cases, with 3 deaths and no outbreaks identified
- 18 fitted the confirmed case definition and 1 fitted the probable case definition
- the 18 confirmed cases demonstrated either antibody titres >512 on two or more occasions (3 cases), or at least a four-fold rise in antibody titre by the legionella IFAT (9 cases), or were culture-positive (4 cases), or a combination of a positive PCR test and a high convalescent titre (2 cases)
- the probable case was urinary antigen test-positive (1 case)
- *L. pneumophila* serogroup 1 was identified as the causative agent in 9 cases, including 1 death
- *L. pneumophila* serogroup 2 was identified as the causative agent in 1 case
- *L. longbeachae* serogroup 1 was identified in 2 cases, including 2 deaths
- for a further 5 *L. longbeachae* cases the serogroup could not be identified
- *L. bozemanii* was identified as the causative agent in 1 case
- *L. dumoffii* was identified as the causative agent in 1 case
- Legionellae isolated from domestic drinking and recreational water systems, including spa pools included *L. dumoffii* and *L. pneumophila* serogroups 3, 6, 7, & 9
- Legionellae isolated from industrial water systems including cooling towers included *L. anisa*, *L. bozemanii* sg1, *L. feeleii* sg1, *L. longbeachae* sg2, *L. rubrilucens* and *L. pneumophila* serogroups 1, 4, 5, 6, & 8
- Legionellae isolated from composts and soils included *L. bozemanii* sg1, and *L. longbeachae* sg1

RESPIRATORY VIRUSES

Influenza Virus

- 131 influenza viruses were reported from laboratory-based surveillance (2007, 93)
- 105 were identified as influenza A, 45 as A/Brisbane/10/2007 (H3N2) - like strains, 7 as A(H3N2) not-antigenically-subtyped, and 53 as A not antigenically subtyped
- 26 were identified as influenza B, 13 further typed as B/Florida/4/2006 - like strain

Respiratory Syncytial Virus, Rhinovirus & Parainfluenza Virus

- 43 cases of respiratory syncytial virus were reported (2007, 38)
- 7 rhinoviruses were reported (2007, 6)
- 11 parainfluenza 1 (2007, 0) and 3 parainfluenza type 3 were reported (2007, 2)

ADENOVIRUSES & ENTEROVIRUSES

Adenoviruses

- 136 adenoviruses were reported (2007, 168)
- 107 adenoviruses were serotyped as adenovirus type 1 (6), type 2 (4), type 3 (16), type 4 (3), type 5 (3), type 8 (66), type 9 (1), type 19 (2), type 37 (4) and untypable (2)

Enteroviruses

- 40 enteroviruses were reported (2007, 40)
- 18 enteroviruses were serotyped as Coxsackie A16 (7), Coxsackie B5 (1), Echovirus 6 (4), Echovirus 7 (2), Echovirus 9 (1), Echovirus 11 (2) and Echovirus 25 (1)

SPECIAL BACTERIOLOGY

Listeria monocytogenes

- 1 isolate of *Listeria monocytogenes* from a human case was referred (for table of human *L. monocytogenes* cases giving more details see www.surv.esr.cri.nz/surveillance/NZPHSR.php)
- the case was an elderly adult with an underlying illness

Corynebacterium diphtheriae

- 12 isolates of *Corynebacterium diphtheriae* were received for toxigenicity testing, typing and surveillance purposes
- 11 isolates were from cutaneous sources, 8 were var. *mitis* and 3 were var. *gravis*
- 1 var. *gravis* isolate was from ankle synovial fluid of a 37 year old male
- all cases were from Auckland
- all were determined to be non-toxigenic by PCR examination for the toxin gene
- 1 isolate of *Corynebacterium ulcerans* was received from cutaneous source in a 45 year old female from Auckland, it was determined by PCR testing to be harbouring the diphtheria toxin gene
- literature reports of disease associated with *C. ulcerans* are rare, but if the organism is recovered from pseudomembranous material the disease must be treated like a case of diphtheria

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Contributions to this publication are invited in the form of concise reports on surveillance issues or outbreak investigations.

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